

This listing of claims will replace all prior versions and listings, of claims in the application.

Listing of Claims

Claims 1-10 (canceled)

Claim 11 (new): A method for controlling a treatment unit (16) for treating at least one feed gas, comprising the following steps:

- (i) providing a pressure swing adsorption (PSA);
- (ii) supplying a product gas that is operating on a parameterized cycle;
and
- (iii) utilizing a control unit (30).

Claim 12 (new): The method according to Claim 11, wherein said method comprises of a treatment unit (16) that consists of N adsorption units.

Claim 13 (new): The method according to Claim 12, wherein said adsorption unit consists of at least one selected from the following: R1, R2, R3, R4, R5, and R6 units.

Claim 14 (new): The method according to Claim 11, wherein said control unit (30) modifies at least one parameter of the feed gas, and/or the product gas.

Claim 15 (new): The method according to Claim 11, wherein said control unit (30) receives a pre-established signal comprising a change in the process parameter.

Claim 16 (new): The method according to Claim 15, wherein said control unit (30) processes said signal to determine the parameters of an exceptional operating cycle.

Claim 17 (new): The method according to Claim 15, wherein said signal is subject to the operating cycle's predicted change.

Claim 18 (new): The method according to Claim 15, wherein intensity of said signal is subject to the change in the composition of the feed gas.

Claim 19 (new): The method according to Claim 11, wherein said control unit (30) comprises a constant reference signal.

Claim 20 (new): The method according to Claim 19, wherein said reference signal is modified to form the pre-established signal when there is a predicted change.

Claim 21 (new): The method according to Claim 15, wherein said pre-established signal is subject to the operation of at least one upstream unit of the treatment unit (16).

Claim 22 (new): The method according to Claim 15, wherein said pre-established signal comprises partially of the feed gas to be treated.

Claim 23 (new): The method according to Claim 16, wherein said exceptional cycle consists of a predetermined duration.

Claim 24 (new): The method according to Claim 16, wherein the duration of said exceptional cycle is transmitted to the control unit (30) via an end signal.

Claim 25 (new): The method according to Claim 24, wherein said end signal is pre-established subject to the predicted change in the composition of the feed gas.

Claim 26 (new): The method according to Claim 11, wherein said parametrized operating cycle of the treatment unit (16) comprises the following:

- (i) a phase of adsorption;
- (ii) a phase of regeneration; and
- (iii) repressurization.

Claim 27 (new): The method according to Claim 26, wherein said phase of adsorption occurs at a high pressure of the cycle.

Claim 28 (new): The method according to Claim 26, wherein said phase of regeneration comprises a step of depressurization down to a low pressure of the cycle.

Claim 29 (new): The method according to Claim 26, wherein said repressurization occurs at the high pressure of the cycle.

Claim 30 (new): The method according to Claim 15, wherein said parameters are selected from either the duration of the phase time ($T\varphi^{\text{exc}}$) and/or the duration of at least one step from the regeneration phase.

Claim 31 (new): The method according to Claim 11, wherein the method comprises the following steps:

- i) sending a signal regularly to the control unit (30) that represents the flow rate and/or the density of the feed gas;
- ii) determining the parameters of the exceptional operating cycle of the treatment unit (16); and
- iii) adjusting parameters on the basis of the signal representing the flow rate and/or the density of said feed gas.

Claim 32 (new): The method according to Claim 11, wherein the method comprises the following steps:

- i) sending a signal regularly to the control unit (30) that represents the flow rate and/or the composition of the product gas;
- ii) determining the parameters of the exceptional operating cycle of the treatment unit (16); and
- iii) adjusting these parameters on the basis of the signal representing the flow rate and/or the composition of said product gas.

Claim 33 (new): A method for controlling a treatment unit (16) for treating at least one feed gas, comprising the following steps:

- (i) providing a pressure swing adsorption (PSA);

- (ii) supplying a product gas that is operating on a parameterized cycle;
 - and
- (iii) utilizing a control unit (30);

wherein said method comprises of a treatment unit (16) that consists of N adsorption units selected from the following group: R1, R2, R3, R4, R5, and R6 unit, and whereby said control unit (30) modifies at least one parameter of the feed gas, and/or the product gas.

Claim 34 (new): A method for controlling a treatment unit (16) for treating at least one feed gas, comprising the following steps:

- (i) providing a pressure swing adsorption (PSA);
- (ii) supplying a product gas that is operating on a parameterized cycle;
 - and
- (iii) utilizing a control unit (30);

wherein said method comprises of a treatment unit (16) that consists of N adsorption units selected from the following group: R1, R2, R3, R4, R5, and R6 units, and whereby said control unit (30) modifies at least one parameter of the feed gas, and/or the product gas and receives a pre-established signal comprising a change in the process parameter, and whereby said control unit (30) processes said signal to determine the parameters of an exceptional operating cycle, and wherein said signal is subject to the operating cycle's predicted change.

Claim 35 (new): The method according to Claim 11, wherein the treatment unit (16) produces hydrogen.

Claim 36 (new): The method according to Claim 35, wherein the treatment unit (16) produces substantially pure hydrogen.

Claim 37 (new): The method according to Claim 36, wherein the treatment unit (16) produces hydrogen comprising greater than about 99.90% purity.

Claim 38 (new): The method according to Claim 37, wherein the treatment unit (16) produces hydrogen comprising from about 99.91% to about 99.99% purity.